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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/845,855 | 04/30/2001 | Thiemo Lang | GR 00 P 1807 | 9507 |
| 24131 | 7590 | 05/20/2004 | EXAMINER | |
| LERNER AND GREENBERG, PA P O BOX 2480 HOLLYWOOD, FL 33022-2480 | | | BELLO, AGUSTIN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2633 | 9 |

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/845,855 | THIEMO LANG | |
| | Examiner | Art Unit | |
| | Agustin Bello | 2633 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 01 March 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 7-18 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-6 and 19 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 30 April 2001 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>5</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group I the species of Figure 3 in Paper No. 8 is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art cited by the applicant (Figure 1) in view of Weber (U.S. Patent No. 5,351,317).

Regarding claims 1 and 19, the prior art cited by the applicant teaches an optical dispersion compensator (Figure 1 of the instant application marked "Prior Art"), comprising: an optical input (e.g. "Input" to reference numeral 1 in Figure 1) receiving an incoming signal having an input spectrum (e.g. f_L , f_H in Figure 1), a frequency demultiplexer (reference numeral 1 in Figure 1) connected to said input and configured to split the incoming signal into two frequency bands (e.g. f_L , f_H in Figure 1); two transmission links (reference numerals 4.1 and 4.2 in Figure 1) connected to said frequency demultiplexer and each receiving a respective one of the two frequency bands, said transmission links including an optically shorter transmission link (reference numeral 4.1 in Figure 1) and an optically longer transmission link (reference numeral 4.2 in Figure 1) acting as a delay line (e.g. $\Delta L(\Delta\tau)$ shown in Figure 1); and at least one frequency recombination unit (reference numeral 3 in Figure 1) connected to said transmission links for

recombining the signals received from said transmission links, and having an optical output (e.g. "Output" shown in Figure 1). The prior art cited by the applicant differs from the claimed invention in that it fails to specifically teach a polarization converter connected in at least one of said transmission links. However, connecting a polarization converter to at least one of the transmission links in a system similar to the prior art is well known in the art. Weber, in the same field of endeavor, teaches it is well known in the art to employ a polarization converter in at least one of the transmission links (reference numeral 40 in Figure 4). One skilled in the art would have been motivated to use a polarization converter as that taught by Weber in order to make the device polarization independent (column 4 lines 58-67). One skilled in the art could have expected a reasonable degree of success in implementing a polarization converter as taught by Weber in the device of the prior art cited by the applicant since both systems deal with demultiplexing frequency multiplexed signals, transmission links of different lengths, and recombining of multiple frequency signals to form a multiplexed output. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a polarization converter as taught by Weber in at least one of the transmission links of the prior art cited by the applicant in order to make the device of the prior art polarization independent.

Regarding claim 2, the prior art cited by the applicant teaches said first and second transmission links (reference numerals 4.1, 4.2 in Figure 1) are Mach-Zehnder arms (page 17 lines 20 of the specification of the instant application).

Regarding claim 3, the prior art cited by the applicant teaches that said input is connected to receive the incoming signal from an optical transmission link (inherent in the description of

the "spectral division" of the input signal of page 17 lines 22-24 of the specification of the instant application).

Regarding claim 4, the prior art cited by the applicant teaches that said optical output is connected to output an optical signal recombined from the spectrally divided signals to an optical transmission link (inherent in that the rest of the system is optical).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art cited by the applicant (Figure 1) in view of Weber (U.S. Patent No. 5,351,317) and Henry (U.S. Patent No. 4,998,793).

Regarding claim 5, the combination of the prior art cited by the applicant and Weber differs from the claimed invention in that it fails to specifically teach that said frequency recombination unit is a TE/TM polarization combiner. However, frequency TE/TM polarization recombination units are well known in the art. Henry, teaches that a recombination unit that functions as a TE/TM polarization combiner (Figure 1; column 7 lines 29-36). One skilled in the art would have been motivated to employ a TE/TM polarization combiner as the recombination unit in the combination of the prior art cited by the applicant and Weber in order to allow both TE and TM modes to be output from the device. One skilled in the art could have expected a reasonable degree of success in implementing the TE/TM polarization combiner in the device of the combination of the prior art and Weber since Henry teaches that the TE/TM polarization combiner is simply a fusion of two fiber arms (Figure 1 of Henry), fiber arms also taught by the prior art cited by the applicant (reference numeral 4.1, 4.2 in Figure 1). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a TE/TM

Art Unit: 2633

polarization combiner as polarization recombination unit of the combination of references in order to allow both TE and TM modes to be output from the device.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art cited by the applicant (Figure 1) in view of Weber (U.S. Patent No. 5,351,317) and Ooi (U.S. Patent No. 5,917,628).

Regarding claim 6, the combination of the prior art cited by the applicant (Figure 1) and Weber differs from the claimed invention in that it fails to specifically teach that said frequency recombination unit is a 3-dB coupler. However, 3-dB couplers are very well known in the art. Ooi teaches the use of 3-dB couplers to combine optical signals (Figure 15). One skilled in the art would have been motivated to use a 3-dB coupler as the frequency recombination unit in the combination of references since they present, at max a 3-dB loss in signal, and because of this are a cost effective alternative to the multiplexer taught by the prior art cited by the applicant. One skilled in the art could have expected a reasonable degree of success in using the 3-dB coupler taught by Ooi as the frequency recombination unit of the combination of references since the 3-dB coupler provides a cost effective means for coupling signals from two fibers, much like the two fibers arms taught by the prior art cited by the applicant (reference numerals 4.1 and 4.2 in Figure 1). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a 3-dB coupler as the frequency recombination unit of the combination of references in order to reduce the overall cost of the system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Agustin Bello
Examiner
Art Unit 2633

AB

